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The Status and Developing Strategy of China's Continuing Engineering Education

Wenjing Li*

Dept. of Mathematics & Physics, Shandong Jiaotong University, Jinan, 250023, China

Abstract

The paper mainly introduced the status and future developing strategy of continuing engineering education (CEE) in China. At first, the paper told about the origin and short history of CEE in China. In the next part, the paper introduced the status of CEE in China such as national policies, folk organizations, forms of research and communication with the international organization. Besides, the paper pointed there are still many shortcomings and difficulties of CEE in China. In the last part, based on the nation's policy and previous research, the paper analyzed the future developing strategy of CEE including continuing to enhance infrastructure and public service, emphasizing on distance education, enhancing the quality of teachers and strengthening co-operation between the university and the enterprise etc.

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1. Induction

Continuing education (called *further education* in the United Kingdom and Ireland) is an all-encompassing term within a broad spectrum of post-secondary learning activities and programs.^[1] Continuing education is not an academic education but a high level of additional education which updates the knowledge and improves the ability of the professionals. Continuing education is actually a kind of lifelong learning. Its goal is to update the professionals' knowledge structure, enhance their creativity and professional technique. It plays an important role in the lifelong

* Corresponding author: Wenjing Li Tel:15153179220
E-mail: liwenjean@163.com

learning society. The higher continuing engineering education (CEE) as an important part of continuing education is becoming the focus of education in the new era. In 1979, the first world conference on CEE held in Mexico. Professor Hongxian Zhang of Tsinghua University attended the meeting on behalf of China and joined the international expert working group of UNESCO. He introduced the concept of CEE into China, published articles to tell about the trend of international continuing education and emphasized the importance of CEE ^[2]. After 30 years of exploration and hard working, CEE in China has made obvious progress. It has formed gradually a government regulation, industry guidance, social participation and self-work unit system. It emphasizes on demand-driven., government departments, industry associations, enterprises, institutions, professionals participate actively in all aspects of the work. The specific status is as follows.

2. Status and Thinking

2.1. National policies

In 1987, State Council promulgated the “Temporary Regulations of Continuing Education for the Professionals” and established a system of advanced training of the professionals. In 2006, the country started to carry out the “Project of Renewal Knowledge of the Professionals” (No.653 Project).The project was included in the "Eleventh Five-Year" plan of national economic and social development. It is the first time for continuing education to be considered into national development plan. According, the project became an important elite training education organized and performed by the government. From 2010, CEE has entered a new developing phase in China. The government published “National Long-term Education Reform and Development Plan》 and “National Long-term Development Program for the Talent” which described the blueprint of CEE which pointed out the specific direction of CEE to serve national economic construction and social development. At present, the government carries out a number of key projects and programs about CEE. Besides, the government promotes a high class research, expert forums, special training, seminars, international exchanges, and other training or learning methods, to make efforts to train high-level professionals.

2.2. Folk organizations

The organization and structure of CEE has almost completed now. In 1984, “Association for Continuing Engineering Education” in China was established. Under the unified guidance of it, national sectors and local associations have been developed rapidly. Various sectors, regions and the grassroots carry out a wide variety of activities and organize regular national seminars of CEE. Especially, many well-known colleges and universities set up “School of Continuing Education” and large enterprises have set up specialized training institutions or further education colleges. Furthermore, China's enterprises’ CEE has a significant industry characteristics and the formation of large-scale development. The institutions are distinctive in the integration of high-quality educational resources and new models of distance education. At the same time, the introduction of the concept of adult education, continuing education and lifelong education make the meaning of CEE extend and expand. Multi-level, multi-format, multi-channel CEE activities have started generally. In the aspect of the scale of education, the quantity of professionals having participated in continuing education is more than 80 million since 2006. At present, all types of continuing education and training institutions have grown to

nearly 60,000 in China. The number of personnel participating CEE is more than 3000 million each year ^[3].

2.3. Various forms of research

In October 1987, the “Research Group of CEE” was formed. The research was the first national CEE topics. It provided an important policy basis to China's CEE in a period. In June 1990, the creative development group of “Association of CEE” set up. This was the first association forms carrying out the study about CEE. Following the current of domestic and international situation and country's economic development, some research activities were organized by associations at all levels, industry and institutions in the form of seminars, forums, focus meeting etc. From 2005 to 2011, previous Ministry of Personnel with original eleven departments and professional associations implement “Project of Renewal Knowledge of the Professionals”^[4] The project has trained 3 million senior professional and technical personnel in five major areas such as modern agriculture, modern manufacturing, information technology, energy technology and modern management. “21st Century Continuing Education Forum” has successfully held ten annual meetings to discuss the hot and difficult issues of the development of CEE since it set up in 2000. The experts of CEE have carried out some systematic research and published some books and papers on the basic of referencing to domestic and foreign research. In those books, the book of “Summary of Continuing Engineering Education”^[5] written by Zhenyi Ma was regarded as a rare systematic theoretical book. It is a good reference of the theory and the practice of CEE activities. There are many academic journals such as “Continue Education Research” , “Continue Education” etc. At present, “The Newspaper of Continuing Education” is the only professional newspaper of continuing education in China.

2.4. Communication with the international organization

There are more changes and ways of domestic and international exchange and cooperation in China. Some Chinese experts have taken an active part in UNESCO and IACEE. They join the IACEE meetings and submit papers. On a hand, the experts carry out the exchange counterparts on abroad. On the other hand, Chinese experts invite international experts to China to lecture and introduce foreign training lessons. Especially, the country strengthens the communication with IACEE, American Society for Engineering Education, Southeast Asia and the Pacific Society for Engineering Education and other international academic organizations. Besides, there is currently an education plan to cultivate excellent engineer in China. The grant is an important reformation operated by Ministry of Education of the People's Republic of China. A part of the grant is “Sino-EU Platform on Engineering Education” which established in 2010 by Ministry of Education of the People's Republic of China and European League of Engineering Education. In recent years, China Scholarship Council (CSC) also provides many changes for professional engineering personnel to continue to study on abroad.

2.5. Rethinking

At first, the studies on CEE ignored the original literature, the methods of studies are mainly lessons summary, discussion, comparative studies, but the other methods for example surveys, literature research are rare in China. Secondly, the studies lack of school-enterprise cooperation and the quality and quantity of the researches need improving. At present, a part of teachers of

continuing education are part-time and unstable. Besides, there are many problems, for example, tasks are not implemented, fund is difficult to apply for, and encourage restraint is fatigue during the process of continuing education. Furthermore, the legal system is still weak although the legal system has made significant progress. Many departments have not established continuing education system. There are some unbalanced development between eastern and western region, state-owned enterprises and non-public organizations, large enterprises and SMEs.

3. Development strategies

3.1. Legal system and national policy

The idea of development of CEE is “Four Persist”: persist the direction of the demand of economic and social development and technological progress; persist people-oriented; persist regarding capacity-building as the core; persist combination of training and using. The goal of CEE is to adjust the industrial structure and improve capability of independent innovation. Besides, the country decides to accelerate the process of legislation of continuing education. The government plan to formulate “The Ordinance of Continuing Engineering Education” and “Manage Methods of Continuing Engineering Education”. The country has increased efforts to train professionals. Especially, the country regards senior seminar as an important way to train high-level personnel. There are about 50 senior seminars every year to train more than 3,000 high-level talents in various fields ^[6]. Besides, the government will strengthen the coordinated development of continuing education of the different regions and different economic organizations, explore the way servicing for non-public economy and SMEs, and expand the scope of public service.

3.2. Continue to enhance public service

The government will increase developing the public service training, release the guideline of the subjects of CEE, organize the implementation of special projects of CEE, integrate resources, construct public information service platform, organize departments to construct faculty library, materials library, project library, organize various types of communication and service, and establish a national information platform. Association for Continuing Education plays an important role in the development of continuing education. Association for Continuing Education at all levels is the bridge between government, educational institutions and the majority of professionals. The association has community advantage of personnel-intensive, extensive links and information well-informed. At the same time, the association has the duty of consultation training service, market development and industry self-regulation.

3.3. Technical methods

China will gradually regard distance education as main training methods ^[7]. There are more and more demand of continuing education in China. It is hard to complete the training task of millions of people and to solve the increasing contradictions between working and learning if the country only relies on traditional classes. However, the distance education can improve training coverage, alleviate the contradictions time between working and learning and ease the financial pressure. Hence, It is necessary to keep up with the development of the internet age,

accelerate the establishment of modern information service platform, develop the distance CEE including radio, television, satellite transmission, explore online training programs, curriculum, management and the mode of interaction, carry out point to point, personalized online learning and training, and make training ways more convenient, the content newer, the effect last more longer. The trend of CEE is to pay attention to provide comprehensive training programs and personalized, flexible and convenient study options for the personnel. Since 2008, Social Networking Service (SNS) ^[8] is popular in the area of distant education and net education in China. It can solve effectively the problems which CEE faces and build the learning platform of expert consult services.

3.4. Teachers' quality

Colleges and universities have favorable conditions and advantages in the aspects of faculty, equipment, data and information, research, science category and more. Therefore, colleges and universities should play an important role in CEE research. For example, colleges and universities should encourage the younger with engineering practice experience, front-line teaching experience, and a certain level of research capacity to engage in CEE research. Especially, the teachers engaged in CEE should go to the enterprise to survey and know about the condition of technical equipment, the research project, the technical innovate task, the quality and the need of the professionals. At the same time, the enterprises can understand advantages of research and teaching in the universities. They can explore areas of mutual cooperation and methods, carry out horizontal research topic and promote a combination of produce, study and research. Besides, the country will continue to strengthen exchanges and global cooperation to enhance the quality of teachers of CEE.

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